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EXAMINER	
MEW, KEVIN D	
ART UNIT	**PAPER NUMBER**
2664	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/919,829	YAMADA ET AL.	
	Examiner	Art Unit	
	Kevin Mew	2664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-46* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-16, 18-31, 33-45* is/are rejected.

7)☒ Claim(s) *17,32 and 46* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *8/2/2001* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2, 3.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

Claim Objections

1. Claims 16, 20, 33 are objected to because of the following informalities:

In claim 16, lines 3, 6, it is not clear as to what "increasing said" is referring to. Appropriate correction is required.

In claim 20, line 4, replace "to allows" with "to allow."

In claim 33, line 2, replace "said router" with "said routers."

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-9, 11-12, 14, 16, 18-25, 27-28, 30-31, 33-39, 41-42, 44-45 are rejected under 35 U.S.C. 102(b) as being anticipated by Iwata (USP 5,687,168).

Regarding claims 1, 18, Iwata discloses a routing controller (ATM switch, see Fig. 5) to perform a method of routing packets in a communications network, wherein the network comprises a plurality of nodes (ATM switches, see Fig. 1) which are interconnected by parallel component links (see links between ATM switches, Fig. 1), the method comprising the steps of:

a) a link manager (link abstracting portion, see element 67, Fig. 5) for grouping said parallel component links (physical link and the logical link) into a bundled link (a link

abstracting portion aggregates physical link and the logical link into one abstracted link, see element 67, Fig. 5 and col. 5, lines 47-52) and

b) a routing module (link state update protocol portion, see element 68, Fig. 5) for performing routing calculations (updating a neighbor link topology information when a neighbor link topology is changed, see col. 5, lines 53-57) according to a link state routing algorithm (by flooding mode) on using said bundled link (abstracted link) as a unit of transmission medium (distributing abstracted link state information by flooding mode, see col. 5, lines 53-57 and col. 4, lines 57-67).

Regarding claims 2, 19, Iwata discloses the oruting controller of claim 18 to perform the method of claim 1, wherein step (a) further comprises the step of creating a first database (first database comprising tables 76-1, 79-1, 71, Fig. 6) in which a plurality of bundled links are mapped to a plurality of component links (a plurality of abstracted links are mapped to a plurality of physical links and logical links, see Fig. 6), and step (b) further comprises the step of creating a second database (a second database comprising tables 73-1 and 79-1, see Fig. 6) in which a plurality of destination addresses (a plurality of addresses of respective adjacent switch) are mapped to a plurality of bundled links (are mapped to a plurality of abstracted links, see col. 6, lines 5-31).

Regarding claim 3, Iwata discloses the method of claim 2, further comprising the step of receiving data packets arriving on said parallel component links (based on physical links and logical links for forwarding ATM cells, see col. 5, lines 37-41 and Fig. 5) and routing the

data packets based on said first and second databases (switching ATM cells based on the abstracted link management table that comprises tables 76-1, 79-1, 71, and tables 73-1 and 79-1, see col. 5, lines 37-41 and Fig. 6).

Regarding claim 4, Iwata discloses the method of claim 2, further comprising the steps of:

downloading said first and second databases to a plurality of interface units (downloading information related to tables 76-1, 79-1, 71, and tables 73-1 and 79-1 to a Hello protocol portion and a switch portion) connected to said parallel component links (connected to logical links and physical links 62, see Fig. 6); and

receiving data packets arriving on said parallel component links at said interface units (exchanges Hello packets based on the connecting condition of the physical link and the logical link, see col. 5, lines 42-46) and routing the data packets based on said downloaded first and second databases (forwarding ATM cells based on the respective logical and physical link information, see col. 5, lines 42-46).

Regarding claims 5, 21, Iwata discloses the routing controller of claim 19 to perform the method of claim 1, wherein step (a) comprises the step of exchanging hello packets (exchanging hello packets) between a pair of said nodes (between adjacent ATM switches) via said parallel component links (via the physical link and logical link) and creating said first database (creating tables 76-1, 79-1, 71, see Fig. 6) in a learning process based on contents of the

exchanged hello packets (based on the connecting condition of the physical link and the logical link between adjacent switches, see col. 5, lines 37-46 and col. 6, lines 29-31).

Regarding claim 6, Iwata discloses the method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links (a link abstracting portion aggregates physical link and the logical link into one abstracted link, see element 67, Fig. 5 and col. 5, lines 47-52) corresponding to different ones of said plurality of nodes (corresponding to the respective ATM switches, see col. 6, lines 12-22).

Regarding claim 7, Iwata discloses the method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different bandwidths (a abstracted link corresponds to a different bandwidth, see col. 7, lines 42-59).

Regarding claim 8, Iwata discloses the method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different management groups (based on the variation amount or ratio of bandwidth of the abstracted link, a different judgment can be made to whether the abstract link state information needs to be transmitted, see col. 7, lines 42-59).

Regarding claim 9, Iwata discloses the method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality

of different link priorities (importance is given for the bandwidth and hence the abstracted link with lowering preference of delay, see col. 8, lines 39-47).

Regarding claim 11, Iwata discloses the method of claim 1, wherein step (a) comprises the step of monitoring status of said parallel component links (monitors whether connecting condition of logical links and physical links, see col. 7, lines 60-67 and col. 8, lines 1-38) and grouping said parallel component links into said bundled link when there is a significant change in the monitored status (when the number of links to the adjacent switch is varied, the result of re-abstracting the links is noticed to the link abstracting portion where a abstracted link is generated, see col. 7, lines 60-67 and col. 8, lines 1-38).

Regarding claim 12, Iwata discloses the method of claim 7, wherein step (a) comprises the steps of maintaining a bundled link management table (abstracted neighbor link state information storage area, see element 78, Fig. 6) for storing a total bandwidth of said bundled link (storing predetermined bandwidth, see col. 7, lines 42-59, col. 8, lines 34-67) and grouping said parallel component links into said bundled link according to the stored total bandwidth (generating abstracted link state information according to the threshold bandwidth value, see col. 8, lines 34-67), further comprising the step of defining a bundled link state according to said stored total bandwidth (checking whether the bandwidth of the abstracted link has been varied in reference to the threshold bandwidth value, see col. 8, lines 34-67) and performing step (b) according to the bundled link state and the stored total bandwidth (transfers updated abstracted link state information to link state update protocol portion and exchanges link state information

between adjacent switches if the threshold bandwidth value has been exceeded, see col. 8, liens 34-67 and col. 9, lines 1-14, 40-51).

Regarding claims 14, 30, 44, Iwata discloses the method of claims 5, 21, 33 above, wherein said first database (a first database comprising tables 76-1, 79-1, 71, see Fig. 6) contains a node identifier identifying a neighbor node (table 71 contains at least one ATM switch identifier) and a link identifier assigned by the neighbor node for identifying each of said parallel component links (table 71 further contains a physical link number and logical link number, see Fig. 6).

Regarding claims 16, 31, Iwata discloses the routing controller of claim 28 to perform the method of claim 12, wherein step (a) comprises:

responsive to a link-up request (adding new link), incrementing a number of component links grouped into said bundled link (adding new physical link or new logical link, see col. 10, lines 42-52) and increasing said by an amount corresponding to a bandwidth of a requested component link (as the amount of link information exchanged is increased, the number of physical and/or logical links increases, see col. 1, lines 62-67, col. 2, lines 1-2 and col. 10, lines 43-52);

responsive to a link-down request (cutting off physical links and logical links), decrementing said number of component links and decreasing said by an amount corresponding to a bandwidth of a requested component link (as the amount of link information exchanged is

decreased, the number of physical and/or logical links decreases see col. 1, lines 62-67, col. 2, lines 1-2 and col. 10, lines 43-52); and

adding a component link requested by the link-up request to said bundled link if the number of component links grouped into said bundled link is greater than zero (the abstracted link is notified when a new link is added) and removing a component link requested by the link-down request from the bundled link if the number of component links grouped into the bundled link is equal to zero (the abstracted link is notified when physical and logical links fail, see col. 7, lines 60-67 and col. 8, lines 1-24, 57-67).

Regarding claim 20, Iwata discloses the routing controller of claim 19, wherein said link manager and said routing module are arranged to download said first and second databases to a plurality of interface units (ports 1, 2, 3 comprising first and second databases, see Fig. 6) connected to said parallel component links (connection to physical links and logical links, see Fig. 6) to allow said interface units (ports 1, 2, 3, Fig. 6) to translate header of said data packet (link state update packet) according to said downloaded first and second databases (according to a first database comprising tables 76-1, 79-1, 71, and a second database comprising tables 73-1 and 79-1, see Fig. 6).

Regarding claim 22, Iwata discloses the method of claim 18, wherein the parallel component links are grouped into a plurality of bundled links (a link abstracting portion aggregates physical link and the logical link into one abstracted link, see element 67, Fig. 5 and

col. 5, lines 47-52) corresponding to different ones of said plurality of nodes (corresponding to the respective ATM switches, see col. 6, lines 12-22).

Regarding claim 23, Iwata discloses the method of claim 18, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different bandwidths (a abstracted link corresponds to a different bandwidth, see col. 7, lines 42-59).

Regarding claim 24, Iwata discloses the method of claim 18, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different management groups (based on the variation amount or ratio of bandwidth of eacb abstracted link, a different judgment can be made to whether that link abstract link state information needs to be transmitted, see col. 7, lines 42-59).

Regarding claim 25, Iwata discloses the method of claim 18, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different link priorities (importance is given for the bandwidth and hence the abstracted link with lowering preference of delay, see col. 8, lines 39-47).

Regarding claim 27, Iwata discloses the routing controller of claim 18, wherein the link manager (abstracted link management table, see Fig. 6) monitors status of said parallel component links (monitors whether connecting condition of logical links and physical links, see

col. 7, lines 60-67 and col. 8, lines 1-38) and grouping said parallel component links into said bundled link when there is a significant change in the monitored status (when the number of links to the adjacent switch is varied, the result of re-abstracting the links is noticed to the link abstracting portion where a abstracted link is generated, see col. 7, lines 60-67 and col. 8, lines 1-38).

Regarding claim 28, Iwata discloses the routing controller of claim 23, wherein the link manager groups said parallel component links into said bundled link according to the stored total bandwidth (generating abstracted link state information according to the threshold bandwidth value, see col. 8, lines 34-67) and defines a bundled link state according to the total bandwidth (checking whether the bandwidth of the abstracted link has been varied in reference to the threshold bandwidth value, see col. 8, lines 34-67) and performs said routing calculations according to the bundled link state and the stored total bandwidth (transfers updated abstracted link state information to link state update protocol portion and exchanges link state information between adjacent switches if the threshold bandwidth value has been exceeded, see col. 8, liens 34-67 and col. 9, lines 1-14, 40-51).

Regarding claim 33, Iwata discloses a router (ATM switch see Fig. 5) for routing packets in a communications network, wherein the network comprises a plurality of said routers (ATM switches, see Fig. 1) which are interconnected by parallel component links (see links between ATM switches, Fig. 1), comprising:

a routing controller (a combination of a link abstracting portion, a link state update protocol portion, a hello protocol portion, see elements 66, 67, 68, Fig. 5);

a plurality of interface units (ports 1, 2, 3, see Fig. 6) connected to said parallel component links (connected with respective physical and logical links, see col. 5, lines 37-41); and

a switch (a switch portion, see element 66, Fig. 5) for switching an inbound hello packet (exchanges Hello packets between adjacent ATM switches) from said interface units (via ports of each ATM switch, see col. 5, lines 42-46 and element 66, Fig. 5) to said routing controller (a combination of a link abstracting portion, a link state update protocol portion, a hello protocol portion, see elements 66, 67, 68, Fig. 5) and an outbound hello packet (exchanges Hello packets between adjacent ATM switches) from the routing controller (a combination of a link abstracting portion, a link state update protocol portion, a hello protocol portion, see elements 66, 67, 68, Fig. 5) to said interface units (via ports of each ATM switch, see col. 5, lines 42-46 and element 66, Fig. 5) and switching a data packet (a link state update packet, see col. 7, lines 19-34) between said interface units (between ports of each ATM switch),

said routing controller (a combination of a link abstracting portion, a link state update protocol portion, a hello protocol portion, see Fig. 5) grouping said parallel component links into a bundled link (a link abstracting portion aggregates physical link and logical link into a abstracted link, see col. 5, lines 47-52 and Fig. 5) according to a link-up or a link-down request (according to addition or removal of physical link and logical link, see col. 5, lines 52-57) and producing a first database (a first database comprising tables 76-1, 79-1, 71, see Fig. 6) and performing routing calculations (updating a neighbor link topology information when a neighbor

link topology is changed, see col. 5, lines 53-57) according to a link state routing algorithm (by flooding mode) on using said bundled link (abstracted link) as a unit of transmission medium (distributing abstracted link state information by flooding mode, see col. 5, lines 53-57 and col. 4, lines 57-67) and producing a second database (a second database comprising tables 73-1 and 79-1, see Fig. 6),

said interface units (ports 1, 2, 3, see Fig. 6) translating header (physical link number, logical link number, see Fig. 6) of said data packet (link state update packet, see col. 7, lines 19-34) according to said first and second databases (according to a first database comprising tables 76-1, 79-1, 71, and a second database comprising tables 73-1 and 79-1, see Fig. 6).

Regarding claim 34, Iwata discloses the router of claim 33, wherein the routing controller (a combination of a link abstracting portion, a link state update protocol portion, a hello protocol portion, see elements 66, 67, 68, Fig. 6) creates said first database (a first database comprising tables 76-1, 79-1, 71, see Fig. 6) by mapping a plurality of bundled links to a plurality of component links (see Fig. 6) and downloads the first database to said interface units (ports 1, 2, 3, see Fig. 6), and creates said second database (a second database comprising tables 73-1 and 79-1, see Fig. 6) by mapping a plurality of destination addresses (ATM addresses, see Fig. 6) to a plurality of bundled links (abstracted links, see Fig. 6) and downloads the second database (a second database comprising tables 73-1 and 79-1, see Fig. 6) to said interface units (ports 1, 2, 3), wherein each of said interface units (ports 1, 2, 3, Fig. 6) translates header of said data packet (link state update packet) according to said downloaded first and second databases (according to a first database comprising tables 76-1, 79-1, 71, and a second database comprising tables 73-1

and 79-1, see Fig. 6) and transmits the header-translated data packet to said switch (transmits link state update packet to ATM switch, see col. 7, lines 19-34).

Regarding claim 35, Iwata discloses the router of claim 33, wherein said routing controller creates said first database (creating tables 76-1, 79-1, 71, see Fig. 6) in a learning process based on contents of the exchanged hello packets (based on the connecting condition of the physical link and the logical link between adjacent switches, see col. 5, lines 37-46 and col. 6, lines 29-31).

Regarding claim 36, Iwata discloses the method of claim 33, wherein the parallel component links are grouped into a plurality of bundled links (a link abstracting portion aggregates physical link and the logical link into one abstracted link, see element 67, Fig. 5 and col. 5, lines 47-52) corresponding to different ones of said plurality of routers (corresponding to the respective ATM switches, see col. 6, lines 12-22).

Regarding claim 37, Iwata discloses the method of claim 33, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different bandwidths (a abstracted link corresponds to a different bandwidth, see col. 7, lines 42-59).

Regarding claim 38, Iwata discloses the method of claim 33, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality

of different management groups (based on the variation amount or ratio of bandwidth of each abstracted link, a different judgment can be made to whether that link abstract link state information needs to be transmitted, see col. 7, lines 42-59).

Regarding claim 39, Iwata discloses the method of claim 33, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different link priorities (importance is given for the bandwidth and hence the abstracted link with lowering preference of delay, see col. 8, lines 39-47).

Regarding claim 41, Iwata discloses the router of claim 33, wherein the routing controller monitors status of said parallel component links (monitors whether connecting condition of logical links and physical links, see col. 7, lines 60-67 and col. 8, lines 1-38) and grouping said parallel component links into said bundled link when there is a significant change in the monitored status (when the number of links to the adjacent switch is varied, the result of re-abstracting the links is noticed to the link abstracting portion where a abstracted link is generated, see col. 7, lines 60-67 and col. 8, lines 1-38).

Regarding claim 42, Iwata discloses the router of claim 33, wherein the routing controller groups said parallel component links into said bundled link according to the stored total bandwidth (generating abstracted link state information according to the threshold bandwidth value, see col. 8, lines 34-67) and defines a bundled link state according to the total bandwidth (checking whether the bandwidth of the abstracted link has been varied in reference to

the threshold bandwidth value, see col. 8, lines 34-67) and performs said routing calculations according to the bundled link state and the stored total bandwidth (transfers updated abstracted link state information to link state update protocol portion and exchanges link state information between adjacent switches if the threshold bandwidth value has been exceeded, see col. 8, liens 34-67 and col. 9, lines 1-14, 40-51).

Regarding claim 45, Iwata discloses the router of claim 42, wherein said routing controller is arranged to:

increment a number of component links grouped into said bundled link (adding new physical link or new logical link, see col. 10, lines 42-52) in response to a link-up request (adding new link), and increase said by an amount corresponding to a bandwidth of a requested component link requested by the link-up request (as the amount of link information exchanged is increased, the number of physical and/or logical links increases, see col. 1, lines 62-67, col. 2, lines 1-2 and col. 10, lines 43-52);

decrement said number of component links in response to a link-down request (cutting off physical links and logical links) and decrease said by an amount corresponding to a bandwidth of a requested component link (as the amount of link information exchanged is decreased, the number of physical and/or logical links decreases see col. 1, lines 62-67, col. 2, lines 1-2 and col. 10, lines 43-52); and

add a component link requested by the link-up request to said bundled link if the number of component links grouped into said bundled link is greater than zero (the abstracted link is notified when a new link is added) and remove a component link requested by the link-down

request from the bundled link if the number of component links grouped into the bundled link is equal to zero (the abstracted link is notified when physical and logical links fail, see col. 7, lines 60-67 and col. 8, lines 1-24, 57-67).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 10, 15, 26, 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata in view of Condict et al. (USP 6,163,392).

Regarding claim 10, Iwata discloses all the aspects of the claimed invention set forth in the rejection of claim 5 above, except fails to disclose the method of claim 1, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a plurality of different light wavelengths. However, Condict discloses exchanging link state packets where the communication path carries a plurality of optical signals at respective wavelengths (see col. 2, lines 1-22 and col. 6, lines 51-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link state routing method and device of Iwata with the teaching in Condict of using optical fibers to carry optical signals at different wavelength in order to exchange link state information. The motivation to do so is to employ wavelength division multiplexing in optical fibers as an approach to increase the capacity of communication services when carrying link state information.

Regarding claim 15, Iwata discloses each of said parallel component links is assigned a common link identifier (each of physical link is assigned a physical link number and each of logical link is assigned a logical link number, see Fig. 6) and said signaling packet (a Hello packet) contains the common link identifier (ATM address of the own ATM switch, see col. 4, lines 19-26) for allowing neighbor nodes to identify a component link (to identify the connecting conditions of each physical link, see col. 4, lines 19-26) which interconnects the neighbor nodes (which connects its own ATM switch and the adjacent switch, see col. 4, lines 19-26), except fails to disclose each of said nodes is an optical cross-connect system and is arranged to send a signaling packet for establishing a wavelength path in said network. However, Condict discloses exchanging link state packets where the communication path carries a plurality of optical signals at respective wavelengths (see col. 2, lines 1-22 and col. 6, lines 51-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link state routing method and device of Iwata with the teaching in Condict of using optical fibers to carry optical signals at different wavelength in order to exchange Hello packets between adjacent switches. The motivation to do so is to employ wavelength division multiplexing in optical fibers as an approach to increase the capacity of communication services when carrying Hello packets.

Regarding claims 26, 40, Iwata discloses all the aspects of the claimed invention set forth in the rejection of claims 18, 33 above, except fails to disclose the method of claim 18, wherein the parallel component links are grouped into a plurality of bundled links corresponding to a

plurality of different light wavelengths. However, Condict discloses exchanging link state packets where the communication path carries a plurality of optical signals at respective wavelengths (see col. 2, lines 1-22 and col. 6, lines 51-67). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link state routing method and device of Iwata with the teaching in Condict of using optical fibers to carry optical signals at different wavelength in order to exchange link state information. The motivation to do so is to employ wavelength division multiplexing in optical fibers as an approach to increase the capacity of communication services when carrying link state information.

4. Claims 13, 29, 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata.

Regarding claim 13, Iwata discloses all the aspects of the claimed invention set forth in the rejection of claims 5, 21, 33 above, except fails to explicitly show the method of claim 5, wherein said bundled link is uniquely assigned an interface IP (internet protocol) address, and wherein said hello packets contain said interface IP address to all neighbor nodes to exchange interface IP addresses. However, Iwata discloses that in IP routing technology, both ends of all links provided between IP routers are assigned IP addresses to exchange link cost information between IP routers. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the link state routing method and device of Iwata with the further teaching of Iwata in using IP routing protocol instead of ATM protocol such that the abstracted link is uniquely assigned an interface IP (internet protocol) address, and hello packets contain IP address to all neighbor nodes to exchange interface IP addresses. The

motivation to do so is to IP technology to determine a minimum cost route based on the link metrics obtained by exchanging link state information.

Allowable Subject Matter

5. Claims 17, 32, 46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

In claim 17, the method of claim 1, further comprising the steps of:

transmitting a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receiving said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.

In claim 32, the routing controller of claim 18, wherein the link manager is arranged to:

transmit a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receive said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.

In claim 46, the router of claim 33, wherein the routing controller is arranged to:

transmit a signaling packet to a downstream neighbor node if an idle outbound component link is available in a first one of the bundled links of the network, said signaling packet containing a transfer list of nodes; and

receive said signaling packet from an upstream neighbor node and setting a connection in a matrix table according to the transfer list contained in the received signaling packet if an idle outbound component link is available in a second one of the bundled links.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

US Patent 6,850,486 to Saleh et al.

US Patent 6,128,292 to Kim et al.

US Patent 6,498,781 to Bass et al.

US Patent 6,788,682 to Kimmit

US Patent 6,084,864 to Liron

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Mew whose telephone number is 571-272-3141. The examiner can normally be reached on 9:00 am - 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wellington Chin can be reached on 571-272-3134. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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